

What is claimed is:

1. (canceled) A medical device for measuring the concentration and/or percentages of one or more hemoglobin derivatives in a blood sample taken from a patient comprising;

a) a housing;

b) a holder for the blood sample contained within the housing;

c) a light generating apparatus contained within the housing comprising at least one compact light source emitting light in the visible region of the spectrum or at least one polychromatic light source and at least one light filter for separating the light from the polychromatic light source into distinct bandwidths along the visible spectrum; wherein the number of light sources or filters in the visible region of the electromagnetic spectrum is less than or equal to the number of hemoglobin derivatives to be measured;

d) a light receiving apparatus contained within the housing comprising at least one light detector receiving light for determining one or more absorbance values of the blood sample at one or more wavelengths within the bandwidth of each light source or filter in the visible region of the spectrum; and

e) a microprocessor for determining the concentration of each hemoglobin derivative from the measured absorbance values.

1 (2.) (previously presented) A medical device for measuring the concentration and/or percentages of one or more hemoglobin derivatives in a blood sample taken from a patient comprising;

a) a housing;

b) a holder for the blood sample contained within the housing;

c) a light generating apparatus, contained within the housing comprising at least one compact light source emitting light in the visible region of the spectrum or at least one polychromatic light source and at least one light filter for separating the light from the polychromatic light source into distinct bandwidths along the visible spectrum; wherein the number of light sources or filters in the visible region of the electromagnetic spectrum is less than or equal to the number of hemoglobin derivatives to be measured and wherein the compact light source(s) or light filter(s) have bandwidths of about 7-50 nanometers;

d) a light receiving apparatus contained within the housing comprising at least one light detector receiving light for determining one or more absorbance values of the blood sample at one or more wavelengths within the bandwidth of each light source or filter in the visible region of the spectrum; and

e) a microprocessor for determining the concentration of each hemoglobin derivative from the measured absorbance values.

2 ~~3~~. (currently amended) The medical device of claim <sup>1</sup>[[1]]~~2~~, wherein the optimal wavelength for determining the absorbance value(s) for a hemoglobin derivative depends on the characteristics of the compact light source and/or optical filter used in the device.

3 ~~4~~. (currently amended) The medical device of claim <sup>1</sup>[[1]]~~2~~, wherein the overall size of the device is sufficiently small so as to be hand-held.

4 ~~5~~. (currently amended) The medical device of claim <sup>1</sup>[[1]]~~2~~, wherein the portable device weighs less than about 50 pounds.

5 ~~6~~. (currently amended) The medical device of claim <sup>1</sup>[[1]]~~2~~, wherein at least one light source emits light ranging from about 450 nanometers to about 700 nanometers.

6 ~~7~~. (currently amended) The medical device of claim <sup>1</sup>[[1]]~~2~~, wherein the compact light sources comprise light emitting diodes, light emitting lasers, a polychromatic light or combinations thereof.

7 ~~8~~. (currently amended) The medical device of claim <sup>1</sup>[[1]]~~2~~, wherein the light receiving source(s) comprise photo detectors, photo diodes, pin diodes, photo transistors, CCD arrays, photo multiplier tubes or combinations thereof.

~~8~~ <sup>1</sup>/~~9~~. (currently amended) The medical device of claim ~~[[1]]2~~, wherein the blood sample comprises hemolyzed blood.

~~9~~ <sup>1</sup>/~~10~~. (currently amended) The medical device of claim ~~[[1]]2~~, further comprising at least one light source emitting light in the high visible to infra red region of the electromagnetic spectrum.

~~10~~ <sup>9</sup>/~~11~~. (original) The medical device of claim ~~10~~, wherein the blood sample comprises non-hemolyzed blood.

~~11~~ <sup>9</sup>/~~12~~. (original) The medical device of claim ~~10~~, wherein the light source emits light in the range of about 650 nanometers to about 1000 nanometers.

~~12~~ <sup>9</sup>/~~13~~. (original) The medical device of claim ~~10~~; wherein the light receiving detector lies on the same plane as the plane used to measure the reflectance of the blood sample.

~~13~~ <sup>9</sup>/~~14~~. (original) The medical device of claim ~~10~~, wherein the absorbance and/or reflectance is used to measure and/or calculate the hematocrit and/or to measure all hemoglobin derivatives as total hemoglobin of non-hemolyzed blood sample.

14 ~~15~~. (currently amended) The medical device of claim ~~[[1]]~~<sup>1</sup>~~2~~,  
comprising at least two compact light sources for distinguishing  
two or more hemoglobin derivatives.

15 ~~16~~. (currently amended) The medical device of claim ~~[[1]]~~<sup>1</sup>~~2~~,  
comprising at least three compact light sources for  
distinguishing three or more hemoglobin derivatives.

16 ~~17~~. (currently amended) The medical device of claim ~~[[1]]~~<sup>1</sup>~~2~~,  
comprising at least five compact light sources for  
distinguishing five or more hemoglobin derivatives.

17 ~~18~~. (currently amended) The medical device of claim ~~[[1]]~~<sup>1</sup>~~2~~,  
comprising at least three compact light sources for  
distinguishing two or more hemoglobin derivatives, wherein one  
light source emits light in the high visible to infra red region  
of the electromagnetic  
spectrum.

18 ~~19~~. (currently amended) The medical device of claim ~~[[1]]~~<sup>1</sup>~~2~~,  
wherein the hemoglobin derivatives to be measured are  
oxyhemoglobin, reduced hemoglobin, partial hemoglobin,  
carboxyhemoglobin, methemoglobin, fetal hemoglobin and/or  
sulfhemoglobin.

19 ~~20~~. (currently amended) The medical device of claim ~~[[1]]~~<sup>1</sup>~~2~~,  
wherein the device further yields values for total hemoglobin,  
hematocrit, oxygen saturation, fractional oxygen saturation,  
oxygen content and/or oxygen capacity.

20 ~~21~~. (currently amended) The medical device of claim ~~[[1]]~~<sup>1</sup>~~2~~,  
wherein the microprocessor comprises software capable of  
validating and/or adjusting the measured concentrations and/or  
percentages of hemoglobin derivatives by use of one or more  
ratiometric curves.

21 ~~22~~. (currently amended) The medical device of claim ~~[[1]]~~<sup>1</sup>~~2~~,  
wherein the device is battery powered.

22 ~~23~~. (original) The medical device of claim ~~21~~<sup>20</sup>, wherein the  
ratiometric calibration curves comprise known ratios of  
absorbance values taken from absorbance spectra comprising more  
than one hemoglobin derivative.

23 ~~24~~. (original) The medical device of claim ~~21~~<sup>20</sup>, wherein the  
ratiometric curves comprise spectral data for combinations of two  
or more hemoglobin derivatives at various known concentrations.

25.-52. (canceled)